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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,556	12/13/2001	Hiroto Yasui	1232-4800	3831

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EXAMINER

CHOI, WILLIAM C

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,556

Applicant(s)

YASUI, HIROTO

Examiner

William C. Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8,9,11,12,14-17,19-22,25 and 30-32 is/are rejected.
- 7) ☒ Claim(s) 3,4,7,10,13,18,23,24 and 26-29 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-6, 12, 14-17, 19, 20-22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtake and further in view of Soskind.

In regards to claim 1, Ohtake discloses a zoom lens system (Abstract and column 1, lines 12-14, Figure 2) comprising, in order from a more distant conjugate point for said zoom lens system, a first lens unit of a negative refractive power (column 6, lines 45-46, Figure 1, "G2"), a second lens unit of negative refractive power (column 6, lines 46-47, Figure 1, "G3") which moves during zooming (column 6, lines 56-58, Figure 1, "G3"), third, fourth and fifth lens units (column 6, lines 46-50, Figure 1, "G4"- "G6"), but does not specifically disclose wherein said zoom lens system further comprises at least one diffraction optical element. Ohtake does disclose, however, said zoom lens system comprising an aspherical surface to provide aberration correction

(column 10, lines 18-31) and within the same field of endeavor, Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems (page 1, section [0015]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the zoom lens system of Ohtake to comprise a diffractive optical element since Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems.

Regarding claims 5 and 6, Ohtake discloses said system further comprising a stop movable with said third lens unit during zooming (column 9, lines 6-9).

The zoom lens of Ohtake would inherently satisfy the conditions set forth in claims 12, 14, 16 and 17.

Regarding claim 15, Ohtake discloses wherein said second lens unit moves from the more distant conjugate point to a less distant conjugate point for said zoom lens system during zooming from a wide-angle end to a telephoto end (Figure 1, "G3").

Regarding claim 19, Ohtake discloses wherein said second lens unit includes one positive lens and one negative lens (Figure 2, "G3", "L3a", "L3b").

Regarding claim 20, Ohtake discloses wherein said second lens unit includes one negative lens (Figure 2, "G3", "L3a").

Regarding claim 21, Ohtake discloses wherein said third lens unit includes one positive lens (Figure 2, "G4", "L42").

Regarding claim 22, Ohtake discloses wherein said fourth lens unit includes one negative lens (Figure 2, "G5", "L53").

Regarding claim 25, examiner takes official notice that it is well known in the art for diffraction optical elements to include diffraction gratings. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the diffraction optical element of Ohtake to include a diffraction grating since it is well known in the art for diffraction optical elements to include diffraction gratings.

Claims 1-2, 8-9 and 32 are rejected under 35 U.S.C. 103(a) as being obvious over Itoh in view of Soskind.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the

reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

In regards to claim 1, Itoh discloses a zoom lens system (Abstract and column 1, lines 7-13, Figures 17A-17D) comprising, in order from a more distant conjugate point for said zoom lens system, a first lens unit of a negative refractive power (column 12, line 9, Figure 17A, "L1"), a second lens unit of negative refractive power (column 9, lines 9-10, Figure 17A, "L2") which moves during zooming (Figure 17A, "L2"), third, fourth and fifth lens units (column 12, lines 10-13, Figure 17A, "L3"- "L5"), but does not specifically disclose wherein said zoom lens system further comprises at least one diffraction optical element. Itoh does disclose, however, said zoom lens system comprising an aspherical surface to provide aberration correction (column 12, lines 42-47) and within the same field of endeavor, Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems (page 1, section [0015]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the zoom lens system of Itoh to comprise a diffractive optical element since Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems.

Regarding claim 2, Itoh further discloses wherein said third lens unit has positive refractive power, said fourth lens unit has negative refractive power, and said fifth lens unit has positive refractive power (column 12, lines 10-13, Figure 17A, "L3"- "L5").

Regarding claim 8, Itoh discloses wherein said system further comprises a stop between said third and forth lens units (column 12, lines 13-14, Figure 17A, "SP").

Regarding claim 9, Itoh discloses wherein said stop moves with the third lens unit (column 12, lines 27-28, Figure 17A, "SP").

Regarding claim 32, Itoh discloses an image pick-up device comprising a zoom lens system set forth above (column 1, lines 7-28).

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohzawa et al and further in view of Soskind.

In regards to claim 30, Ohzawa et al discloses an image-projecting device comprising a zoom lens system (Abstract and column 1, lines 41-48, Figure 2) comprising, in order from a more distant conjugate point for said zoom lens system, a first lens unit of a negative refractive power (column 3, line 63 – column 4 and column 3, line 29, Figure 2, "G2"), a second lens unit of negative refractive power (column 3, lines 29-30, Figure 2, "G3") which moves during zooming (column 3, line 60 – column 4, line 6), third, fourth and fifth lens units (column 3, line 63 – column 4, line 3, Figure 2, "G4", "G5" and "G6"- "G9"), wherein said image-projecting device projects an original image to a subject surface (column 3, lines 9-17, Figure 1, "I2"), said original image being located at a less distant conjugate position of said zoom lens system (Figure 1, "I1"), but does not specifically disclose wherein said zoom lens system further comprises at least one

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diffraction optical element. Ohzawa et al does disclose, however, said zoom lens system comprising an aspherical surface to provide aberration correction (column 10, lines 18-31) and within the same field of endeavor, Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems (page 1, section [0015]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the zoom lens system of Ohzawa et al to comprise a diffractive optical element since Soskind teaches that aspherical surfaces or diffractive optical elements can be used to provide low cost techniques to correct aberrations in optical systems.

Regarding claim 31, Ohzawa et al further discloses wherein said original image is formed by a liquid crystal panel (column 3, lines 15-16).

Allowable Subject Matter

Claims 3-4, 7, 10-11, 13, 18, 23-24 and 26-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in reference to the allowable claims, none of the prior art either alone or in combination disclose or teach of the claimed limitations to warrant a rejection under 35 USC 102 or 103.

The prior art fails to teach a combination of all the claimed features as presented in claim 3: a zoom lens system as claimed further comprising a sixth lens unit, wherein said fifth lens unit moves during zooming

The prior art fails to teach a combination of all the claimed features as presented in claim 4: a zoom lens system as claimed further comprising a sixth lens unit of positive refractive power.

The prior art fails to teach a combination of all the claimed features as presented in claim 7: a zoom lens system as claimed wherein said diffraction optical element is located closer to a less distant conjugate point than said stop.

The prior art fails to teach a combination of all the claimed features as presented in claim 10: a zoom lens system as claimed wherein said diffraction optical element is located closer to a less distant conjugate point than said stop.

The prior art fails to teach a combination of all the claimed features as presented in claim 11: a zoom lens system as claimed wherein said diffraction optical element is located in said fifth lens unit

The prior art fails to teach a combination of all the claimed features as presented in claim 13: a zoom lens system as claimed wherein said fourth lens unit moves from the more distant conjugate point to a less distant conjugate point for said zoom lens system during zooming from a wide-angle end to a telephoto end.

The prior art fails to teach a combination of all the claimed features as presented in claim 18: a zoom lens system as claimed wherein said lens units at both ends in said

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zoom lens system do not move during zooming from a wide-angle end to a telephoto end.

The prior art fails to teach a combination of all the claimed features as presented in claim 23: a zoom lens system as claimed wherein said first lens unit has three lenses including, in order from the more distant conjugate point, a positive lens, a negative lens and a negative lens.

The prior art fails to teach a combination of all the claimed features as presented in claim 24: a zoom lens system as claimed wherein said first lens unit has three lenses including, in order from the more distant conjugate point, a positive lens, a positive lens and a negative lens.

The prior art fails to teach a combination of all the claimed features as presented in claim 26: a zoom lens system as claimed wherein said diffraction optical element is made of stacked layers of diffraction gratings.

The prior art fails to teach a combination of all the claimed features as presented in claim 27: a zoom lens system as claimed wherein said diffraction optical element is formed by combining two diffraction gratings having the same grating thickness and facing each other so as to make flat a surface of said diffraction optical element.

The prior art fails to teach a combination of all the claimed features as presented in claim 28: a zoom lens system as claimed wherein said diffraction optical element is formed by combining a plurality of diffraction gratings with each other.

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The prior art fails to teach a combination of all the claimed features as presented in claim 29: a zoom lens system as claimed wherein said diffraction optical element is formed by combining a plurality of diffraction gratings facing each other via air.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sekita et al is being cited herein to show a zoom lens that would read on or make obvious a number of the above rejected claims, however, such rejections would have been repetitive.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

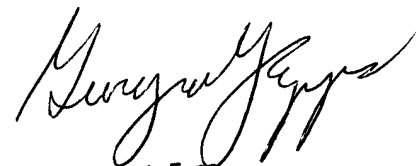
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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W.C.

William Choi
Patent Examiner
Art Unit 2873
September 20, 2002


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